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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,788	01/21/2004	Richard Neil Braithwaite	PWV1.PAU.51	3547

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EXAMINER

TRINH, SONNY

ART UNIT PAPER NUMBER

2687

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/761,788

Applicant(s)

BRAITHWAITE, RICHARD NEIL

Examiner

Sonny TRINH

Art Unit

2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-50 is/are allowed.
- 6) ☒ Claim(s) 1-4, 11, 12 and 14-19 is/are rejected.
- 7) ☒ Claim(s) 5-10 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/18/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. **Claims 14, 16** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 recites the limitation "distance computation" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-4** are rejected under 35 U.S.C. 102(b) as being anticipated by Hang ("Hang"; U.S. Patent Number 5,644,268).

Regarding **claim 1**, with reference to figures 2-3 and descriptions in columns 2-4, Hang discloses a feed forward amplifier system (abstract), comprising:

an input for receiving an RF input signal (figure 3, input RF IN 38);

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a first control loop coupled to the input and comprising a main amplifier (figure 3, MAIN amplifier 30), a main amplifier sampling coupler (figure 3, coupler 80), a delay element (figure 2, delay 15), and a cancellation combiner (column 2 line 58 to column 3 line 13);

a second control loop coupled to the first control loop and comprising a first signal path (figure 3), a second signal path comprising an error amplifier (column 2 lines 7-33), and an error coupler coupling the first and second signal paths (CPL2);

an output coupled to the error coupler (RF OUT); and

means for controlling at least one of the first and second control loops employing an alignment list having a plurality of list elements (i.e. "reference signals, see table in columns 5-6), each element having an alignment setting and a collection of parameters characterizing the operating condition of the feed forward amplifier system (columns 2-4).

Regarding **claim 2**, Hang further teaches that first control loop further comprises a gain adjuster and a phase adjuster (figure 3, G1, P1) and wherein each said alignment setting comprises a loop 1 gain adjuster setting and a loop 1 phase adjuster setting (column 4 line 52 to column 5 line 32, see table).

Regarding **claim 3**, Hang further teaches that first control loop further comprises a gain adjuster and a phase adjuster (figure 3, G2, P2) and wherein each said alignment setting comprises a loop 2 gain adjuster setting and a loop 2 phase adjuster setting (column 4 line 52 to column 5 line 32, see table).

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Regarding **claim 4**, Hang further teaches the collection of parameters characterizing the operating condition of the feed forward amplifier system comprises input signal power and input signal carrier frequency (see table).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. **Claims 11-12, 15, 17-18, 20** are rejected under 35 U.S.C. 102(a) as being anticipated by Cova et al. ("Cova"; U.S. Patent Number 6,504,428).

Regarding **claim 11**, with reference to figure 2 and description, Cova discloses an adaptive controller for controlling a loop of an amplifier system (abstract, column 4), comprising:

one or more inputs for receiving one or more attribute parameters corresponding to current operating conditions of the amplifier system (pilot receiver, figure 2); and

one or more processors (DSP 50) coupled to said one or more inputs and having an associated alignment list and programmed with an alignment list algorithm and a controller algorithm to provide loop adjustment settings to control the loop of the amplifier system, wherein said alignment list algorithm generates said list with adjustment settings computed by said controller algorithm and associates one or more attribute parameters with each adjustment setting (columns 4-5).

Regarding **claim 12**, Cova further teaches the controller for controlling a loop of an amplifier system when the loop becomes sufficiently misaligned (column 4, specifically lines 8-56).

Regarding **claim 15**, Cova further teaches wherein the attribute parameters comprise input signal power (claims 7, 20).

Regarding **claims 17-18**, Cova further teaches one or more inputs for receiving alignment data is a pilot signal input (Pilot receiver 80, figure 2).

Regarding **claim 20**, Cova further teaches that the adjustment settings comprise gain adjuster and phase adjuster settings (figure 2, blocks 16, 47).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claim 19** is rejected under 35 U.S.C. 103(a) as being unpatentable over Cova et al. ("Cova"; U.S. Patent Number 6,504,428) in view of Bingham ("Bingham"; U.S. Patent Number 6,771,125).

Regarding **claim 19**, Cova teaches the invention but does not explicitly disclose the input for loop test data.

In an analogous art, Bingham teaches the tuning feed-forward amplifiers for adjusting the effective operation of the equipment. Bingham further teaches the loop test (figure 3, column 6).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to use, within the system of Cova, the loop test, as taught by BingHam, in order to verify that the tuning is complete or not so that error can be minimized.

Allowable Subject Matter

5. **Claims 5-10, 13** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding **claim 5**, the prior art provided numerous examples of error correction in feed forward amplifier, but failed to disclose or fairly suggest the specific combination of structural and functional limitations set forth in claim 5, specifically, wherein the collection of parameters characterizing the operating condition of the feed forward amplifier system are defined as an attribute vector and a distance is defined between any two attribute vectors.

Regarding **claim 13**, the prior art also fails to disclose an adaptive controller for controlling a loop of an amplifier system, wherein said alignment list algorithm selects an alignment list adjustment setting for use by said controller algorithm by computing

the distance between the one or more attribute parameters corresponding to current operating conditions and the attribute parameters associated with each of the alignment settings in the list and selecting the alignment setting corresponding to the attribute parameter with the minimum distance.

6. **Claims 21-50** are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding **claim 21**, the prior art of record fails to disclose a method for controlling an amplifier by providing a list of alignment settings, each alignment setting having an associated operating condition; detecting the current operating conditions of the amplifier system; comparing the current operating conditions to those in the list of alignment settings; and selecting the alignment setting associated with the most similar operating condition in the list.

Claims 22-29 are allowed by virtue of their dependency on claim 21.

Regarding **claim 30**, the prior art also fails to disclose a method of maintaining a list of alignment settings of a control loop of an amplifier system by selecting an element of the alignment list; determining the element of the alignment list having the most similar corresponding operating conditions to the selected element; determining if the two elements are sufficiently similar to be considered redundant; and deleting the oldest of the two elements of the alignment list if the elements are redundant.

Claims 31-37 are allowed by virtue of their dependency on claim 30.

Regarding **claim 38**, the prior art also fails to disclose a method of generating a hierarchical list of alignment settings of a control loop of an amplifier system, said list comprising a plurality of elements each element having an alignment setting and a corresponding set of parameters corresponding to operating conditions of the amplifier system, said list having a hierarchical structure comprising at least two levels, said method comprising the steps of selecting an element in a first level of the alignment list; determining the element of the first level of the alignment list having the most similar corresponding operating conditions to the selected element; and demoting the oldest of the two elements to a lower level of the hierarchical alignment list.

Claims 39-44 are allowed by virtue of their dependency on claim 38.

Regarding **claim 45**, the prior art also fails to disclose a method for controlling an amplifier system comprising the steps of:

“...providing a hierarchical list of alignment settings having at least two levels, each alignment setting having an associated operating condition and some or all of the alignment settings in a highest level having subset alignment settings in a lower level;

detecting the current operating conditions of the amplifier system;

comparing the current operating conditions to those in the highest level of the hierarchical list of alignment settings;

selecting the alignment setting associated with the most similar operating condition in the highest level of the list;

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comparing the current operating conditions to those in the subset of the selected highest level alignment setting; selecting the alignment setting of the subset with the most similar operating condition; and

selecting the alignment setting in the higher or lower level having the most similar operating condition to the current operating condition...".

Claims 46-50 are allowed by virtue of their dependency on claim 45.

CONCLUSION

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9306, (for formal communications intended for entry, for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, 6th Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sonny TRINH whose telephone number is 703-305-1961. The examiner can normally be reached on Monday-Thursday and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed URBAN can be reached on 703-305-4385.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SONNY TRINH
PRIMARY EXAMINER

22 September 2004